

A Case of Tomcat Double Vision



By ADAA Carlos Lamasortega

It was early morning on board USS *John F. Kennedy*, and the wind was blowing hard across the flight deck. I recently had reported to the Red Rippers of VF-11 and had begun my first cruise. I was excited. The squadron was doing well, and we were nearing the end of our transatlantic voyage. In a few hours, I would be on a trip to the dispensary.

As a new airman in a fighter squadron, I was assigned to the line division. I had many varied duties and helped on preflights, aircraft launches, and other routine maintenance items. At 0400, the shop supervisor sent me to do a little corrosion-control work on one of our jets. The moon wasn't out, so it was dark as heck on the flight deck. Standing in the catwalk, I checked my float coat one more time and strapped on my cranial. I didn't know it then, but I was about to get a large dose of appreciation for my personal protective equipment.

I carried a few corrosion pads and some lubricant and climbed the stairs to the "roof." After completing some work on the bottom part of the jet, I moved to the top. Saving the top for last was an easy choice; I didn't want to get on the Tomcat until the last minute because of the wind.


I climbed the boarding ladder and made my way aft and outboard on the wings, moving toward the

slats. I checked the slats on both wings and traveled aft on top of the aircraft to work on the exhaust nozzles. I stood on the horizontal stabs to do the upper part of the exhaust nozzles—this was an accepted maintenance practice on the F-14. Applying lubricant to the top surface of the nozzles, I suddenly got caught in a strong gust, felt my feet fall out from under me, and fell toward the deck. The fall from seven feet was in two parts: I hit the horizontal stabilizer before falling to the ground.

After bouncing off the horizontal stab, I rotated perfectly to make sure my head hit the flight deck before the rest of my body did. That impact was numbing, and I remained still for a while because I was seeing double. When my vision cleared, I did a quick check for blood or broken parts. I ended up with only a couple of scratches and a broken cranial.

My head bucket was broken in two places, but it saved my life. No one had seen me fall, so I went down to the line shack and told my supervisor what just had happened. He sent me to medical.

The corpsman and doc told me I was lucky that I had worn my cranial and had cinched the chinstrap. I always do wear the right flight-deck gear, so I think it was training, not luck. The corpsman treated me for a mild concussion, and my shipmates watched me overnight.

Had I not followed the rules or had I not worn my cranial correctly, I could have ended up with a disability or worse. I now realize that an incident like mine could happen to anyone at a moment's notice. I believe in the value of my PPE, and my lesson learned—not to mention a look at my damaged cranial—has made a believer out of everyone in my shop. 

Airman Apprentice Lamasortega works in the line division at VF-11.



Thermal Runaway



By Cranston Dickson

Thermal runaway is a condition in which the current for a fully charged nickel-cadmium battery rises out of proportion to the impressed-voltage level. This condition is caused when heat from oxygen recombination—an inherent property of most rechargeable batteries—causes the battery's voltage to drop as it gets hot.

During thermal runaway, the battery can become dangerously hot, emit excessive amounts of toxic gas, and spew electrolyte. This condition can occur in either the battery workshop or the aircraft.


Low electrolyte levels, electrolyte contamination, no gas barrier, or a deteriorated gas barrier can cause thermal runaway.

When oxygen recombination occurs, heat is generated, causing the battery temperature to rise and the battery voltage to drop. This process causes the battery to draw a higher charge current. As the temperature of the battery increases, the battery voltage continues to decrease, and the current progressively becomes greater. As this process continues, electrolyte eventually reaches the boiling point. If allowed to continue, the electrolyte level may fall below the top of the plates, causing them to dry out. The cadmium plates

may then ignite and burn like steel wool, melting the separator, causing the cell to short circuit, and igniting the hydrogen in the cell. A battery's stored energy can feed a short circuit, allowing it to burn through the entire battery.

In event of a thermal runaway, electrical power should be isolated, and no attempt should be made to handle or move the battery for at least 30 minutes. After this period or when the battery is cool enough, carefully remove the vent caps of the affected cells. Make sure you wear a facemask, gloves and protective apron when doing this work.

The Royal Australian Navy uses nickel-cadmium batteries in Sea King and Squirrel helicopters. Over the last ten years, two incidents of thermal runaway have occurred in Sea Kings; RAN Squirrels have had none. In both H-3 incidents, the aircraft were not damaged significantly but had major damage the batteries.

Thermal runaway is preventable, but it requires maintainers rigidly to follow servicing procedures at appropriately equipped battery-charging facilities. It is imperative only trained people service and maintain nickel-cadmium batteries. These preventive steps will work in most cases, but a situation occasionally is beyond the control of the battery maintainer or squadron personnel. This usually happens when aircraft are required to operate in extremely high temperatures, which is less than ideal for battery operation. 

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The U.S. Navy hasn't had too many cases of thermal runaway, but this story and the one in the January 2003 issue of Approach, "What Could Go Wrong Now?" show the danger is real and can be catastrophic. This story is reprinted courtesy of Touch-down—the Australian Navy Aviation Safety and Information Magazine.